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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/398,502

09/17/1999

HABIB RIAZI

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RYAN, MASON & LEWIS, LLP  
1300 POST ROAD, SUITE 205  
FAIRFIELD, CT 96824

EXAMINER

DUONG, DUC T

ART UNIT

PAPER NUMBER

2619

MAIL DATE

DELIVERY MODE

03/31/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/398,502	RIAZI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Duc T. Duong	2619	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/11/08</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-4, 6-10, 12-15, 17-20, 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Shirakata et al (US Patent 6,618,352 B1).

Regarding to claims 1 and 7, Shirakata discloses an orthogonal frequency division multiplexing OFDM transmitter (fig. 16-17) for transmitting an OFDM signal having a plurality of sub-carriers, comprising a differential encoder 231 for modulating said OFDM signal in the frequency domain using adjacent sub-carriers to produce

Art Unit: 2619

differentially encoded symbols (col. 14 lines 11-26); an IFFT buffer (implicitly shown) for storing said differentially encoded symbols and one or more pilot tones to produce an analog signal centered at a desired carrier frequency (col. 13 lines 41-65); and a transformer 205 for creating said OFDM signal (col. 13 lines 56-58).

Regarding to claims 2 and 8, Shirakata discloses the transformer implements an Inverse Fast Fourier Transform (col. 13 lines 56-58).

Regarding to claims 3 and 9, Shirakata discloses the transformer implements an orthogonal transformation (it is inherent in OFDM system the transformer implements an orthogonal transformation).

Regarding to claims 4 and 10, Shirakata discloses the transformer generates said OFDM signal with a plurality of sub-carriers for carrying data (col. 13 lines 34-41).

Regarding to claims 6 and 12, Shirakata discloses the differential encoding is performed with respect to consecutive sub-carriers in said OFDM system (col. 14 lines 19-25).

Regarding to claims 13 and 18, Shirakata discloses an orthogonal frequency division multiplexing OFDM receiver (fig. 6 and 9), comprising a transformer 5 for recovering said OFDM signal having a plurality of sub-carriers, wherein said recovered signal contains differentially encoded symbols and one or more pilot tones and wherein said recovered signal is centered at a desired carrier frequency (col. 22 lines 21-35); and a differential decoder 15 for demodulating said OFDM signal in the frequency domain wherein said differential decoding is performed using adjacent sub-carriers (col. 21 lines 28-33).

Regarding to claims 14 and 19, Shirakata discloses the transformer implements a Fast Fourier Transform (col. 22 lines 21-35).

Regarding to claims 15 and 20, Shirakata discloses the transformer implements an orthogonal transformation (it is inherent in OFDM system the transformer implements an orthogonal transformation).

Regarding to claims 17 and 22, Shirakata discloses the differential decoding is performed with respect to consecutive sub-carriers in said OFDM system (col. 21 lines 28-33).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5, 11, 16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirakata in view of Kleider et al (US Patent 6,487,252 B1).

Regarding to claims 5, 11, 16, and 21, Shirakata discloses all the limitations with respect to claims 1, 7, 13, and 18, except for at least one unmodulated sub-carrier generated by said transforming step is allocated as a pilot bin to provide a reference within each OFDM symbol. However, Kleider discloses a wireless communication system and method for synchronization using unmodulated sub-carrier as pilot tone (fig. 1-3 col. 2 lines 55-64). Thus, it would have been obvious to a person of ordinary skill in

the art to provide such unmodulated sub-carrier as pilot tone as taught by Kleider into Shirakata's system for a rapid time and frequency acquisition.

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Duong whose telephone number is (571)272-3122. The examiner can normally be reached on M-F (8:00 AM-5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on 571-272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/D. T. D./  
Examiner, Art Unit 2619

/Wing F Chan/  
Supervisory Patent Examiner, Art  
Unit 2619  
3/26/08